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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

RONESI, VICKEY M

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/814,445

Applicant(s)

ZHONG, HONG

Examiner

Vickey Ronesi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13, 15 and 27-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15 and 27-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/19/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. The outstanding claims objections and 35 USC 112 rejections are withdrawn in light of applicant's amendment filed 8/22/2005.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.
3. The new grounds of rejection set forth below are necessitated by applicant's amendment filed 8/22/2005. In particular, claim 1 has been amended to recite the dissipation factor, claim 15 has been amended to recite the average particle size of the particulate filler, and the newly added claims recite the average particle size of the particulate filler, bond line thickness, and other particulate fillers. These limitations were not present in the original claims. Thus, the following action is properly made final.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-13, 15 and 27-40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

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With respect to claims 1, 31, 39, and 40, the claim recites “a dissipation factor of less than about [0.01 or 0.001] at about 10kHz”. It is the examiner’s position that this phrase fails to satisfy the written description requirement of 35 USC 112, first paragraph since there does not appear to be a written description requirement of dissipation factors less than 0.01 or 0.001 at a specified frequency of 10kHz in the application as originally filed, *In re Wright*, 866 F.2d 422, 9 USPQ2d 1649 (Fed. Cir. 1989) and MPEP 2163. While there is support of “a dissipation factor of less than about 0.01, preferably less than 0.001” (paragraph 0039 of the specification), there is no support for the frequency.

With respect to claims 15 and 32, the claims recite an average particle size of “to less than 1 micron”. The examiner has not found any support for this phraseology in the specification as originally filed. While there is support for an average size of 0.01 to about 25 microns in paragraph 0022 of the specification, there is no support for the endpoint “less than 1 micron”.

With respect to claim 33, the claim recites an average particle size of “to about 0.254 microns”. The examiner has not found any support for this phraseology in the specification as originally filed. While there is support for the “maximum particle size in the formulation is preferably between 0.1-1.0 times that of the desired bond line thickness” of 0.01 mils to 5 mils, this only provides support for a *maximum*, not average, particle size of 0.254 microns.

With respect to claims 29 and 30, no support is found in the originally filed disclosure for a bond line thickness of “from about 0.001 microns to about 1 microns” or “from about 0.001 microns to about 0.1 microns”. While support is had for “between 0.01 mils to 5 mils” (i.e., 0.254 microns to 127 microns) and “between 0.01 to 2 mils” (i.e., 0.254 microns to 50.8

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microns) (paragraph 0022 of the specification), there is no support for the term “about” or for the endpoints of 0.001 microns and 1 micron.

With respect to claim 34, the claim recites that the bond line thickness is in a range of from about “0.1 times to about 1 times the average particle size”. The examiner has not found any support for this phraseology in the specification as originally filed. While there is support for the “maximum particle size in the formulation is preferably between 0.1-1.0 times that of the desired bond line thickness” of 0.01 mils to 5 mils (paragraph 0022 of the specification), this only provides support for a *maximum*, not average, particle size.

With respect to claim 35, the claim recites that the composition has “a bond line thickness of about 0.01 miles”. The examiner has not found any support for the term “about” in the specification as originally filed (paragraph 0022 of the specification).

With respect to the remaining claims, they are rejected for being dependent on a rejected claim.

5. Claims 29, 30, 34, and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

“Bond line thickness” is a property of an article and cannot be applied to a composition, i.e., a composition is dimensionless and cannot have a property based on dimensions.

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Claim Rejections - 35 USC § 102/103

6. Claims 1, 2, 4-7, 9-12, and 27 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Misra '910 (US 2003/0027910).

The discussion set forth in paragraph 6 of the Office action mailed 6/1/2005 is incorporated here by reference.

With respect to the dissipation factor, given that Misra '910 either anticipates or renders the obvious the presently claimed composition and further given that a material and its properties are inseparable, it is the examiner's position that the composition of Misra '910 also exhibit the presently claimed properties. Moreover, without a clear understanding of what the dissipation factor is and how having a relatively lower amount of liquid metal affects such a property, the property is either inherent or intrinsic in Misra '910. Should applicant argue criticality of the presently claimed dissipation factor, it will be noted that applicants' data have no probative value to support such an assertion.

Claim Rejections - 35 USC § 103

7. Claims 1-13 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Misra '116 (US 2003/0187116).

The discussion set forth in paragraph 7 of the Office action mailed 6/1/2005 is incorporated here by reference.

With respect to the dissipation factor, given that Misra '116 renders the obvious the presently claimed composition and further given that a material and its properties are inseparable, it is the examiner's position that the composition of Misra '116 also exhibit the

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presently claimed properties. Moreover, without a clear understanding of what the dissipation factor is and how having a relatively lower amount of liquid metal affects such a property, the property is intrinsic in Misra '910. Should applicant argue criticality of the presently claimed dissipation factor, it will be noted that applicants' data have no probative value to support such an assertion.

8. Claims 15 and 27-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Misra '116 (US 2003/0187116) in view of Murayama et al (US 4,942,190).

The discussion with respect to Misra '116 in paragraph 7 above is incorporated here by reference.

Misra '116 discloses that the particulate filler is boron nitride, alumina, and/or graphite and exemplifies on particle diameter of 3 microns (paragraph 0039) and that the compositions are formed into coatings have a thickness of 0.5-5 mils (paragraph 0022).

Misra '116 does not disclose a particle diameter less than 1 micron, thickness (i.e., bond line thickness) of less than 0.1 mils, or metal oxide particles other than aluminum oxide.

With respect to the thickness, while Misra '116 does not disclose thicknesses less than 0.5 mils, it is the examiner's position that the values are close enough that one of ordinary skill in the art would have expected the same properties and thus, if desired make thinner samples.

With respect to the particle diameter and the use of metal oxides other than aluminum oxide, Murayama et al discloses a curable paste (abstract) comprising a thermosetting resin and thermally conductive fillers such as aluminum, magnesium, and titanium oxides and teaches that

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a particle size of less than 20 microns (preferably 0.1-10 microns) is desirable to prevent settling of the filler (col. 4, lines 12-40).

Given that Murayama et al discloses a thermosetting composition comprising thermoconductive fillers and further given the common use of metal oxides other than aluminum oxide as thermoconductive fillers as taught by Murayama et al, it would have been obvious to one of ordinary skill in the art to utilize relatively smaller (i.e., less than the microns exemplified by Misra '116) thermoconductive filler, including metal oxides other than aluminum oxide, in the composition of Misra '116 and thereby arrive at the presently cited claims.

Response to Arguments

9. Applicant's arguments with respect to the claims have been considered but are moot in view of the new grounds of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vickey Ronesi whose telephone number is (571) 272-2701. The examiner can normally be reached on Monday - Friday, 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

10/27/2005

vr



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